PITAGORAS
ACADEMIA

TRIGONOMETRÍA

Profesor
DAVIS REYES

R.T DE ÁNGULOS AGUDOS

1. Si: $0<\alpha<90°$, además:

$$\frac{1}{2Ctg\alpha}+\frac{1}{6Ctg\alpha}+\frac{1}{12Ctg\alpha}+\ldots\ldots+\frac{1}{90Ctg\alpha}=1{,}8$$

Calcular: $E=\sqrt{5}(Sen\alpha - Cos\alpha)$

Resolución:

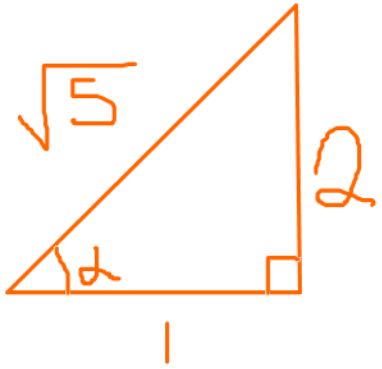
$$Tg\alpha\left(\frac{1}{2}+\frac{1}{6}+\frac{1}{12}+\ldots+\frac{1}{90}\right)=\frac{18}{10}$$

$$Tg\alpha\left(1-\cancel{\frac{1}{2}}+\cancel{\frac{1}{2}}-\cancel{\frac{1}{3}}+\cancel{\frac{1}{3}}-\cancel{\frac{1}{4}}+\ldots+\cancel{\frac{1}{9}}-\frac{1}{10}\right)=\frac{18}{10}$$

$$Tg\alpha\left(1-\frac{1}{10}\right)=\frac{18}{10}$$

$$Tg\alpha\left(\frac{9}{\cancel{10}}\right)=\frac{18}{\cancel{10}}$$

$$Tg\alpha=\frac{2}{1}$$



Piden:

$$E=\sqrt{5}\left(\frac{2}{\sqrt{5}}-\frac{1}{\sqrt{5}}\right)$$

$$E=\cancel{\sqrt{5}}\left(\frac{2-1}{\cancel{\sqrt{5}}}\right)$$

$$E=1$$

A)1 B)2 C)3 D)4 E)5

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2. Sabiendo que : Tan(2x+y+10°) = Cot(3x+2y-6) ; Cos(3x-y+20°)Sec(3y-x+12°) = 1

+90 =

Calcular:

M = 4Csc(2x+10)-3Sec(5y)

Resolución:

$5x+3y+4=90$

$5x+3y=86$

$3x-y+20=3y-x+12$

$4x+20=4y+12$

$x+5=y+3$

$x+2=y$

$5x+3(x+2)=86$

$5x+3x+6=86$

$8x=80$

$x=10$

$y=12$

Piden:

$M=4\text{Csc}(30°)-3\text{Sec}60°$

$4(2)-3(2)$

$\underbrace{8-6}_{2}$

A)1 B)2 C)3 D)1/3 E)1/2

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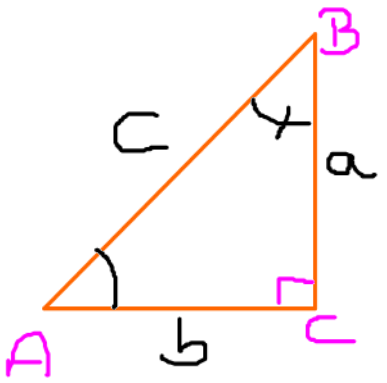
3. En un triángulo recto en ACB, recto en C, Se cumple que: TanACosB = 3, Calcular:

$$\sqrt{\mathrm{Sec}^2\mathrm{A} - 3\mathrm{CscB}} = E$$

$$\left(\frac{a}{b}\right)\left(\frac{a}{c}\right) = 3 \Rightarrow a^2 = 3bc$$



$$a^2 + b^2 = c^2$$

$$E^2 = \mathrm{Sec}^2\mathrm{A} - 3\mathrm{CscB}$$

$$E^2 = \frac{c^2}{b^2} - 3\frac{cb}{bb}$$

$$E^2 = \frac{c^2 - a^2}{b^2} = 1$$

$$E^2 = 1$$

$$E = 1$$

A)1 B)2 C)3 D)$\sqrt{2}$ E)$\sqrt{3}$

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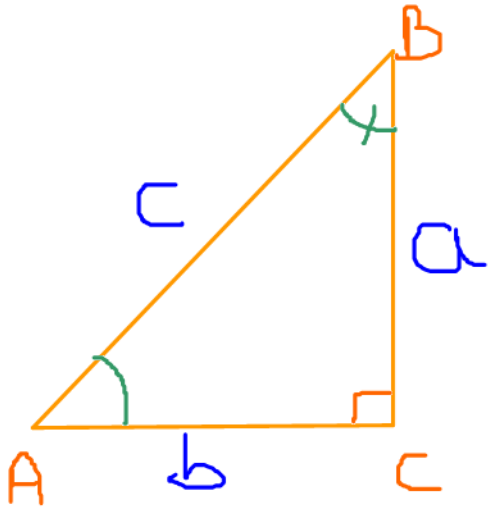
4. En un triángulo rectángulo ACB, Recto en C, si: CotA + SecB = 2, Calcule:

$$E = \text{CscA} - \text{TanB}$$

Resolución:



$c^2 = a^2 + b^2$

$\text{ctgA} + \text{secB} = 2$

$\frac{b}{a} + \frac{c}{a} = 2$

$\boxed{b + c = 2a}$

$E = \text{CscA} - \text{tgB}$

$E = \frac{c}{a} - \frac{b}{a} = \frac{c-b}{a}$

$c - b = aE$

$b + c = 2a$

$c^2 - b^2 = 2a^2E$

$a^2 = 2a^2E$

$\frac{1}{2} = E$

A)1 B)2 C)4 D)1/4 E)1/2

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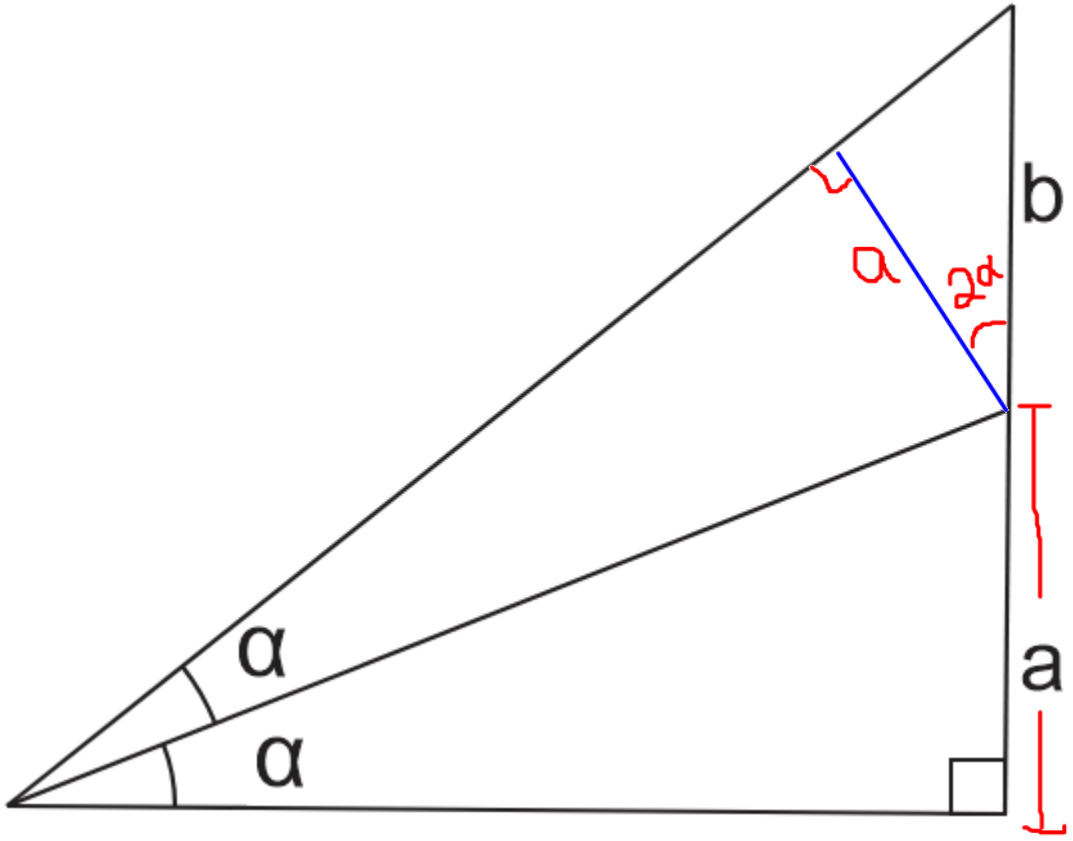
5. A partir del grafico mostrado, calcule el valor de Cos(2α)



$\cos 2\alpha = \frac{a}{b}$

A)b/a B)a/b C)b/$\sqrt{b^2 - a^2}$ D)a/ $\sqrt{b^2 - a^2}$ E)b-a/b+a

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6. Si: $\underbrace{\text{Sen}(\pi\text{Senx}) = \text{Cos}(2\pi\text{Senx})}$; $0 < \text{Senx} < \frac{2}{3}$, entonces el valor de $\underline{6\text{senx}+1}$ es:

Resolución:

$$\pi S_x + 2\pi S_x = \frac{\pi}{2}$$

$$3\cancel{\pi} S_{enx} = \frac{\cancel{\pi}}{2}$$

$$S_x = \frac{1}{6}$$

$$6S_{enx} = 1$$

$$\underline{6S_{enx}+1} = 2$$

A)1 B)2 C)3/2 D)5/2 E)1/2

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7. Si: "θ" es la medida de un ángulo agudo que se cumple: 3Senθ +4Cscθ = 13

Calcule: $\sqrt{2}$Cotθ + 2Cscθ

Resolución:

$3S_\theta + 4C_{sc}\theta = 13 \quad \times S_\theta$

$3S_\theta^2 + 4 = 13S_\theta$

$3S_\theta^2 - 13S_\theta + 4 = 0$

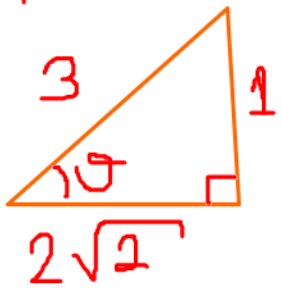
$3S_\theta - 1 = 0$

$S_\theta - 4 = 0$

$3S_\theta - 1 = 0 \wedge S_\theta - 4 = 0$

$\underbrace{S_{en}\theta = \frac{1}{3}}_{V} \wedge \underbrace{S_\theta = 4}_{Falso}$

xq: θ es agudo



Piden:

$\underbrace{\sqrt{2}\left(\frac{2\sqrt{2}}{1}\right) + 2\left(\frac{3}{1}\right)}_{4+6=10}$

A)5 B)7 C)8 D)10 E)13

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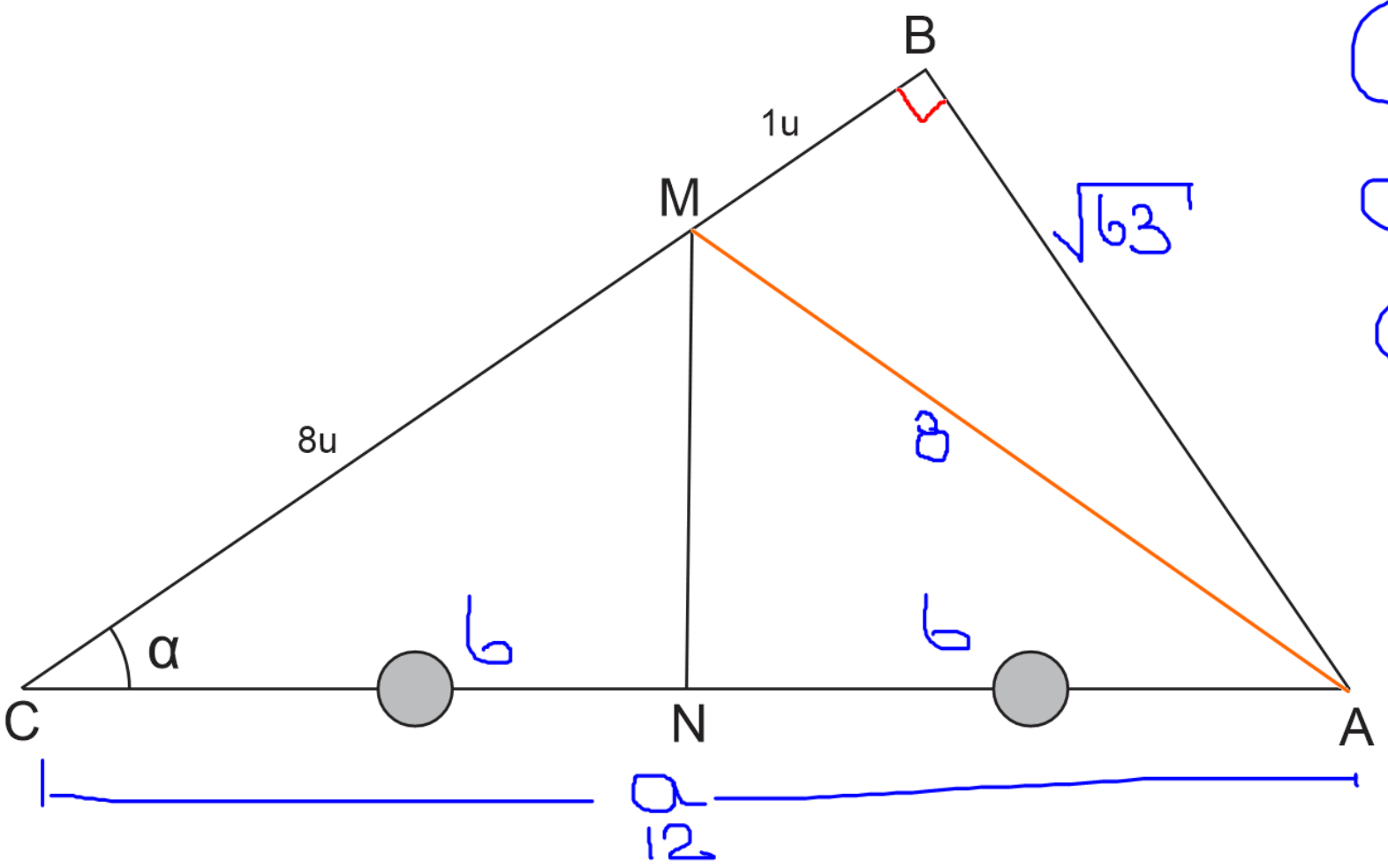
8. A partir del gráfico, el valor de Cscα es:



$a^2 = \sqrt{63}^2 + a^2$

$a^2 = 63 + 81 = 144$

$a = 12$

$\text{Sec}\,\alpha = \frac{12}{9} = \frac{4}{3}$

A)5/4 B)4/3 C)5/3 D)2 E)3

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9. El producto de cinco razones trigonometricasde un angulo agudo es1, el valor de una de Las razones trigonométricas de dicho ángulo agudo es:

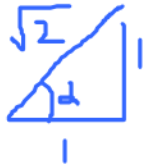
Resolución:

$$\operatorname{Sen}\alpha \cdot \operatorname{Cos}\alpha \cdot \operatorname{tg}\alpha \cdot \operatorname{ctg}\alpha \cdot \operatorname{Sec}\alpha \cdot \operatorname{Csc}\alpha = 1$$

I Caso: $S_\alpha \cdot C_\alpha \cdot \operatorname{tg}\alpha \cdot \operatorname{ctg}\alpha \cdot \operatorname{Sec}\alpha = 1 \rightarrow \operatorname{Csc}\alpha = 1 \rightarrow \alpha = 90$ x

II Caso: $C_\alpha \operatorname{tg}\alpha \operatorname{ctg}\alpha \operatorname{Sec}\alpha \operatorname{Csc}\alpha = 1 \rightarrow \operatorname{Sen}\alpha = 1 \rightarrow \alpha = 90$ x

III Caso: $\operatorname{Sen}\alpha \cdot \operatorname{Cos}\alpha \cdot \operatorname{tg}\alpha \cdot \operatorname{Sec}\alpha \cdot \operatorname{Csc}\alpha = 1 \rightarrow \operatorname{ctg}\alpha = 1 \rightarrow \alpha = 45$ ✓



$\operatorname{Csc} 45 = \sqrt{2}$

A)1/2 B)2 C) $\sqrt{3}/2$ D)$\sqrt{2}$ E)$\sqrt{3}/3$

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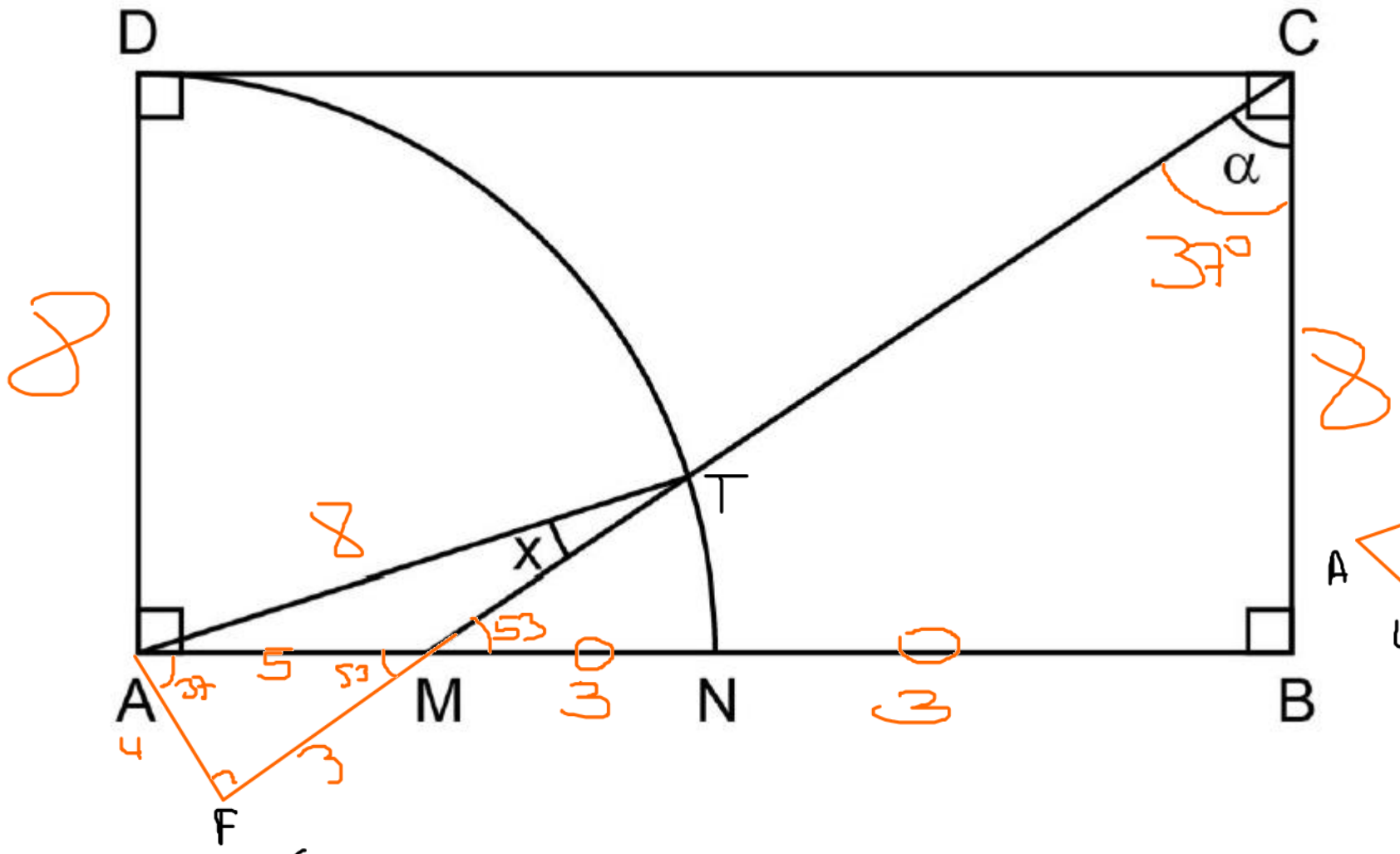
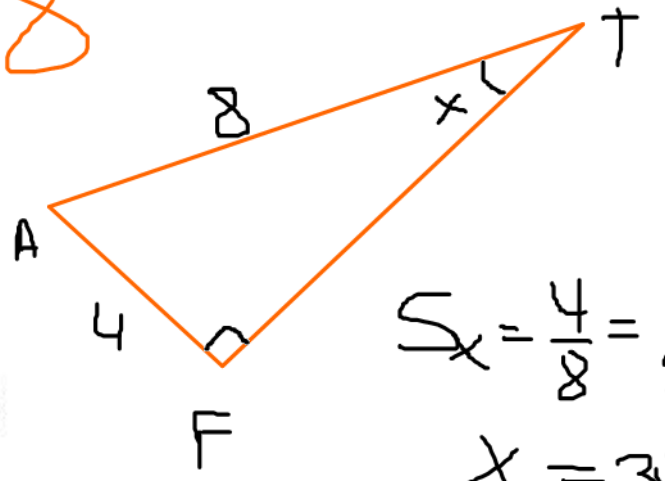
10. En la figura mostrada, si MN = NB, Tanα = 0,75, calcule la medida del angulo "x"



$Tg\alpha = \frac{3}{4} \Rightarrow \alpha = 37°$



$S_x = \frac{4}{8} = \frac{1}{2}$

$x = 30°$

A)53° B)30° C)20° D)37°/2 E)15°

FIN DE LA SESIÓN

PRACTICA Y APRENDERÁS

CLAVES

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30